

REMARKS

The above amendments to the above-captioned application along with the following remarks are being submitted as a full and complete response to the Official Action dated December 14, 2005. In view of the above amendments and the following remarks, the Examiner is respectfully requested to give due consideration to this application, to indicate the allowability of the claims, and to pass this case to issue.

Status of the Claims

Claims 1-25 are under consideration in this application. Claims 1, 5 and 16 are being amended, as set forth in the above marked-up presentation of the claim amendments, in order to more particularly define and distinctly claim applicant's invention.

The claims are being amended to correct formal errors and/or to better recite or describe the features of the present invention as claimed. All the amendments to the claims are supported by the specification. Applicant hereby submits that no new matter is being introduced into the application through the submission of this response.

Prior Art Rejections

Claims 1-3 were rejected under 35 U.S.C. §102(e) as being anticipated by Kurokawa (US Patent No. 6,621,130), as evidenced by Ovshinsky (US Patent No. 5,335,219). Under 35 U.S.C. §103(a), claim 4 was rejected as being unpatentable over Kurokawa '130 in view of Ovshinsky '219 and Jachimowicz (US Patent No. 5,821,911); claims 5-12 were rejected over Kurokawa '130 in view of Ovshinsky '219; claim 13 was rejected over Kurokawa '130 in view of Ovshinsky '219 and Jachimowicz '911; claim 14 was rejected over Kurokawa '130 in view of Ovshinsky '219, Ovshinsky (US Patent Nos. 5,296, 716 and 5,694,146); claims 16-22 and 25 were rejected over Kurokawa '130 in view of Ovshinsky '219; claim 23 was rejected over Kurokawa '130 in view of Ovshinsky '219 and Jachimowicz '911; and claim 24 was rejected over Kurokawa '130 in view of Ovshinsky '219, '716 and '146. These rejections have been carefully considered, but are most respectfully traversed.

The image display device of the invention, as now recited in claim 1, comprises a display section comprised of a plurality of pixels; and a control section which controls said display section. The image display device includes a nonvolatile phase-change type memory

device having a memory for image display which is comprised of *phase-change device elements* and *TFTs*.

The invention of claim 5 further recites that the nonvolatile phase-change type memory device of claim 1 is comprised of at least one variable-resistance memory element and at least one TFT.

The invention of claim 16 further recites that the nonvolatile phase-change type memory device of claim 1 is comprised of combinations of memory cells, and each of said memory cells is comprised of one variable-resistance memory element and one TFT, and retains display data represented by one bit or more.

The material for forming the phase-change type variable-resistance memory element 56 may be a material made chiefly of Zn and Te, a chalcogenide material containing at least one element of Te, Se and S (e.g., p. 43, 1st paragraph). *“While the ON-resistance of the memory TFT was about 500 k Ω , the phase-change type variable resistor serving as the memory element exhibited a high resistance value of about 100 M Ω in the amorphous state, thereby realizing the stable memory operation (p. 19, lines 2-7).”*

The invention provides the following advantages (p. 19, lines 8-15): (1) Continuously generating display images based on image data retained in memories of respective pixels, even after inputting and outputting of image data are discontinued by stopping the operation of the peripheral circuits. (2) Since the memories are of the nonvolatile type, the periodic rewriting of information, which is called refreshing, is not required.

Applicants respectfully contend that none of the cited prior art references teaches or suggests such an “image display device including a nonvolatile phase-change type memory device having a memory for image display which is comprised of *phase-change device elements* and *TFTs*” as the invention.

Contrary to the Examiner’s assertion (p. 2, lines 6-8 of paragraph No. 1 of the outstanding Office Action) that “Kurokawa teaches an image display device including a nonvolatile memory device having a memory for image display which is comprised of TFTs (col. 17, lines 53-63, plurality of transistors, col. 3, line 39),” the relevant portions in Kurokawa merely disclose the semiconductor being provided with a plurality of memory transistors. In particular, the Embodiment 5 (col. 17, lines 53-65) as relied upon by the Examiner does not specify which type of memory transistors are applied therein, but indicated that Embodiments can be freely combined with Embodiments 1-3 (col. 8, lines 53-54), all of whose memory transistors can be “N type,” “P type,” “NN type,” or “PP type”

memory transistors (col. 11, line 47; col. 13, lines 35-57, 60; col. 15, line 58-59). According to these descriptions, Kurokawa's memory transistors may be any kinds of field-effect transistors (FET), such as MOSFETs (Metal-Oxide-Semiconductor Field-Effect Transistor), MESFETs (Metal-Semiconductor Field-Effect Transistor), etc.

Kurokawa's description regarding Embodiment 5 that "a memory transistor according to the invention can be formed into one body with a component of a semiconductor apparatus comprising a TFT formed on a substrate having an insulating surface (col. 17, lines 53-56)", does NOT mean the memory transistor is made of TFT as asserted by the Examiner. Rather, it means that Kurokawa's memory transistor can be combined into a unitary structure with a component of a semiconductor apparatus comprising a TFT formed on a substrate having an insulating surface. It was the "semiconductor apparatus" to be combined with Kurokawa's memory transistor which includes a TFT, not "Kurokawa's memory transistor" which includes a TFT. As pointed out previously, Kurokawa's memory transistor is a "N type," "P type," "NN type," or "PP type" memory transistors, such as a MOSFET, rather than a TFT. There is nowhere in Kurokawa which describes the memory transistor including a TFT or any phase-change device element.

Regardless the Examiner's assertion, Kurokawa's nonvolatile memory is formed of memory transistors only, without employing any phase-change device element therein as recited in claim 1, and Kurokawa does not disclose a nonvolatile memory device having a memory which is comprised of TFTs.

Contrary to the Examiner's other assertion (p. 2, lines 8-10 of paragraph No. 1 of the outstanding Office Action) that Kurokawa's "semiconductor nonvolatile memory device (col. 21, lines 19-22) is a nonvolatile phase-change type memory device, as evidenced by Ovshinsky," Kurokawa does NOT teach or suggest that the semiconductor nonvolatile memory device as "phase-change type" or that "the memory transistor being replaced by a nonvolatile phase-change type memory element" anywhere in the disclosure.

Although Ovshinsky discloses a nonvolatile phase-change type memory device, Ovshinsky does not teach or suggest that its nonvolatile phase-change type memory device is applicable to an image display device anywhere in the disclosure.

MPEP does not allow embedding a 103 rejection under the cover of a 102 rejection as presented here via the language of "as evidence by". Instead, the Examiner must fulfill the agency's obligation to cite references to support any motivation to combine Kurokawa with Ovshinsky by providing the specific teaching of the combination on the record to allow

accountability.

To establish a prima facie case of obviousness, the Board must, inter alia, show "some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references." In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). "The motivation, suggestion or teaching may come explicitly from statements in the prior art, the knowledge of one of ordinary skill in the art, or, in some cases the nature of the problem to be solved." Kotzab, 217 F.3d at 1370, 55 USPQ2d at 1317. Recently, in In re Lee, 277 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002), we held that the Board's reliance on "common knowledge and common sense" did not fulfill the agency's obligation to cite references to support its conclusions. Id. at 1344, 61 USPQ2d at 1434. Instead, the Board must document its reasoning on the record to allow accountability. Id. at 1345, 61 USPQ2d at 1435.

See In re Thrift, 298 F.3d 1357.

Such an obligation to provide specific teaching(s) also applies to other existing or future obviousness rejections.

Other cited prior art references fail to compensate for the deficiencies of Kurokawa and Ovshinsky.

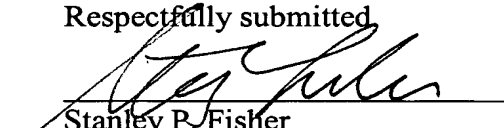
Kurokawa, Ovshinsky, other cited references, and their combinations fail to teach or suggest each and every feature of the present invention as recited in independent claims 1, 5 and 16 from which other claims depend. As such, the present invention as now claimed is distinguishable and thereby allowable over the prior art cited in the Office Action. The withdrawal of the outstanding prior art rejections is in order, and is respectfully solicited.

Conclusion

In view of all the above, clear and distinct differences as discussed exist between the present invention as now claimed and the prior art reference upon which the rejections in the Office Action rely. Applicants respectfully contend that the prior art references cannot anticipate the present invention or render the present invention obvious. Rather, the present invention as a whole is distinguishable, and thereby allowable over the prior art.

Favorable reconsideration of this application is respectfully solicited. Should there be any outstanding issues requiring discussion that would further the prosecution and allowance of the above-captioned application, the Examiner is invited to contact the Applicant's undersigned representative at the address and telephone number indicated below.

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